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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/991,154

11/16/2001

Morten Nissov

1020

3833

7590

09/30/2004

John P. Maldjian  
TyCom (US) Inc.  
Rm 2B-106  
250 Industrial Way West  
Eatontown, NJ 07724

EXAMINER

PHAN, HANH

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/991,154

Applicant(s)

NISOV ET AL.

Examiner

Hanh Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/16/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 09/24/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. In claim 26, the phrase "**a Raman/EDFA amplifier**" should be changed to -- of a Raman/EDFA amplifier--.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 26 recites the limitation "**said Raman portion**" in line 2. There is insufficient antecedent basis for this limitation in the claim.
5. Claim 4 recites the limitation "**said rare earth doped amplifier**" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102*

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under

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the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-7, 9, 11-14, 16-18, 20, 21, and 24-29 are rejected under 35

U.S.C. 102(e) as being anticipated by Sun et al (US Patent No. 6,417,961).

Regarding claim 1, referring to Figures 1 and 2, Sun discloses a method of compensating for chromatic dispersion in an optical signal transmitted on a long-haul terrestrial optical communication system including a plurality of spans (16)(Fig. 1), said method comprising:

allowing chromatic dispersion to accumulate over at least one of said spans to a first predetermined level (Fig. 1, col. 3, lines 1-12); and

compensating for said first pre-determined level of dispersion using a dispersion compensating fiber (i.e., dispersion compensating fiber DCF 28, Fig. 2) causing accumulation of dispersion to a second predetermined level (col. 3, lines 36-67).

Regarding claim 2, Sun further discloses the chromatic dispersion is allowed to accumulate over two or more of said spans to said first predetermined level (Figs. 1 and 2).

Regarding claim 3, Sun further discloses the dispersion compensating fiber (i.e., DCF 28, Fig. 2) is disposed between stages of a multi-stage rare earth doped amplifier (24, 34)(Fig. 2, col. 4, lines 1-17).

Regarding claim 4, Sun further discloses rare earth doped amplifier is an erbium doped amplifier (Figs. 1 and 2).

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Regarding claim 5, Sun further discloses the dispersion compensating fiber (i.e., DCF 28, Fig. 2) is disposed in an amplifier (18)(Fig. 1) following a relatively low loss one of the spans (16)(Fig. 1).

Regarding claim 6, Sun further discloses the dispersion compensating fiber (i.e., DCF 28, Fig. 2) is disposed between a Raman portion (26, 38, 36) and an EDFA portion (34) of a Raman/EDFA amplifier.

Regarding claim 7, Sun further discloses configuring a gain of the Raman portion to achieve a desired noise figure level for the Raman/EDFA amplifier (col. 4, lines 37-53).

Regarding claim 9, Sun further discloses configuring a gain of said EDFA portion to achieve a predetermined total gain for said Raman/EDFA amplifier (Fig. 2).

Regarding claim 11, Sun further discloses the EDFA (34)(Fig. 2) portion of the Raman/EDFA amplifier is a single-stage EDFA.

Regarding claims 12, 16 and 25, Sun further discloses the signal is transmitted a distance of greater than 600 kilometers (col. 1, lines 26-32).

Regarding claims 13, 17, 20, 21, 27 and 28, referring to Figures 1 and 2, Sun discloses an optical communication system comprising:

a transmitter (12)(Fig. 1) configured to transmit an optical signal over an optical information path (16, 18)(Fig. 1) to a receiver (14)(col. 3, lines 1-12), the optical information path (16, 18) comprising:

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at least one Raman/EDFA amplifier (18)(Fig. 2) having a Raman portion (26, 38, 36)(Fig. 2) and an EDFA (34) portion and at least one dispersion compensating fiber (28)(Fig. 2) disposed between the Raman portion and the EDFA portion (col. 3, lines 37-67 and col. 4, lines 1-17).

Regarding claims 14, 18 and 24, Sun further discloses the EDFA portion (34)(Fig. 2) is a single-stage EDFA.

Regarding claims 26 and 29, Sun further discloses the dispersion compensating fiber (26)(Fig. 2) is disposed within a Raman portion of a Raman/EDFA amplifier.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 8, 10, 15, 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al (US Patent No. 6,417,961) in view of Friedrich (US Patent No. 6,466,362).

Regarding claims 8, 15, 19 and 22, Sun differs from claims 8, 15, 19 and 22 in that he does not specifically teach the gain of the Raman portion is about 10-15dB. However, Friedrich in US Patent No. 6,466,362 teaches the gain of the Raman portion is about 10-15dB (col. 7, lines 5-7). Therefore, it would have been

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obvious to one having skill in the art at the time the invention was made to incorporate the gain of the Raman portion is about 10-15dB as taught by Friedrich in the system of Sun. One of ordinary skill in the art would have been motivated to do this since Friedrich suggests in column 7, lines 5-7 that using such the gain of the Raman portion is about 10-15dB have advantage of allowing minimizing the noise figure for a plurality of different span losses.

Regarding claims 10 and 23, the combination of Sun and Friedrich teaches the gain of the EDFA portion is about 5-15 dB (col. 7, lines 5-7 of Friedrich).

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Taylor et al (US Patent No. 6,178,038) discloses optical amplifier having an improved noise figure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

A handwritten signature in cursive script, appearing to read 'Hanh Phan', is written over a horizontal line.

Hanh Phan

09/24/2004